



SEQUENCE LISTING

<110> Carr, Antony M.

<120> Cell-Cycle Checkpoint Genes

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<210> 1

<211> 8239

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (80) .. (8011)

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Ile Pro Ala Leu Arg Glu Leu Gly Ser Ala Thr Pro Glu Glu Tyr Asn
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Thr Val Val Gln Lys Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg
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Ile Leu Thr Asp Val Asn Val Ala Val Glu Leu Val Lys Lys Thr
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Asp Ser Gln Pro Thr Ser Val Met Leu Leu Asp Phe Ile Gln His Ile
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Met Lys Ser Ser Pro Leu Met Phe Val Asn Val Ser Gly Ser His Glu
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Arg Lys Gly Ser Cys Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu
95 100 105

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Cys	Glu	Val	Ile	Cys	Ser	Leu	Leu	Phe	Leu	Phe	Lys	Ser	Lys	Ser	Pro	
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caa tgc caa act caa cag gaa aac ctc agc agt aat agt gat gga ata Gln Cys Gln Thr Gln Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile	415 420 425	1360
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 Ile Gly Arg Ala Ala Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His
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 Tyr Thr Glu Ile Arg Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln
 910 915 920

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 925 930 935

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 975 980 985

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 1100 1105 1110 1115

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 Pro Glu Leu Met Ala Asp Tyr Leu Gln Pro Lys Leu Leu Gly Ile Leu
 1120 1125 1130

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Lys Lys Met Ala Leu Asn Ser Leu Met Ser Leu Met Lys Leu Met Gly		
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Trp Asp Cys Phe Val Arg Cys Leu Asp His Ala Cys-Leu Gly Ser Leu		
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1295 1300 1305		
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Lys Glu Thr Leu Tyr Lys Asn Gln Glu Lys Leu Ile Lys Tyr Ala Thr		
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Asp Ser Glu Thr Val Glu Pro Ile Ile Ser Gln Leu Val Thr Val Leu		
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Ser Thr Asp	Trp Ser Gly Val Lys	Lys Pro Ile Tyr Leu	Ser Lys Leu	
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Gly Ser Asn Phe Ala Glu Trp	Ser Ala Ser Trp Ala	Gly Tyr Leu Ile		
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Thr Lys Val Arg His Asp	Leu Ala Ser Lys Ile	Phe Thr Cys Cys Ser		
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1535	1540	1545		
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Val Tyr Ala	Glu Ile Met Ala Val	Leu Lys His Asp Asp	Gln His Thr	
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Thr Val Phe Ser Met Leu	Asp His Leu Thr Gln	Trp Ala Arg His Lys		
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Phe Gln Ala Leu Lys	Ala Glu Lys Cys Pro	His Ser Lys Ser Asn	Arg	
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Asn Lys Val Asp	Ser Met Val Ser Thr	Val Asp Tyr Glu Asp	Tyr Gln	
1615	1620	1625		
agt gta acc	cgt ttt cta gac ctc	ata ccc cag gat act	ctg gca gta	5008
Ser Val Thr	Arg Phe Leu Asp Leu	Ile Pro Gln Asp Thr	Leu Ala Val	
1630	1635	1640		

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Ala Ser Phe Arg Ser Lys Ala	Tyr Thr Arg Ala Val	Met His Phe Glu	
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Ser Phe Ile Thr Glu Lys	Lys Gln Asn Ile Gln	Glu His Leu Gly Phe	
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Val Ser Ala Ile Arg Lys Ala Glu Pro	Ser Leu Lys Glu Gln	Ile Leu	
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Glu His Ser Leu Gly Leu Leu	Arg Asp Ala Thr Ala	Cys Tyr Asp	
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Arg Ala Ile Gln Leu Glu Pro	Asp Gln Ile His	Tyr His Gly Val	
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Val Asn Gly Val His	Ala Asn Arg Ser Glu	Trp Thr Asp Glu Leu Asn	
1760	1765	1770	
acg tac aga gtg gaa gca gct tgg aaa	ttg tca cag tgg gat	ttg gtg	5440
Thr Tyr Arg Val Glu Ala Ala Trp Lys	Leu Ser Gln Trp Asp	Leu Val	
1775	1780	1785	
gaa aac tat ttg gca gca gat gga	aaa tct aca aca tgg	agt gtc aga	5488
Glu Asn Tyr Leu Ala Ala Asp Gly	Lys Ser Thr Thr Trp	Ser Val Arg	
1790	1795	1800	
ctg gga cag cta tta tta tca	gcc aaa aaa aga gat	atc aca gct ttt	5536
Leu Gly Gln Leu Leu Leu Ser	Ala Lys Lys Arg Asp	Ile Thr Ala Phe	
1805	1810	1815	
tat gac tca ctg aaa cta	gtg aga gca gaa caa	att gta cct ctt tca	5584
Tyr Asp Ser Leu Lys Leu Val Arg Ala Glu	Gln Ile Val Pro Leu Ser		
1820	1825	1830	1835
gct gca agc ttt gaa aga ggc tcc tac caa	cga gga tat gaa tat	att	5632
Ala Ala Ser Phe Glu Arg Gly Ser Tyr Gln	Arg Gly Tyr Glu Tyr Ile		
1840	1845	1850	
gtg aga ttg cac atg tta tgt gag ttg	gag cat agc atc aaa	cca ctt	5680
Val Arg Leu His Met Leu Cys Glu Leu	Glu His Ser Ile Lys	Pro Leu	
1855	1860	1865	
ttc cag cat tct cca ggt gac agt	tct caa gaa gat tct	cta aac tgg	5728
Phe Gln His Ser Pro Gly Asp Ser	Ser Gln Glu Asp Ser	Leu Asn Trp	
1870	1875	1880	
gta gct cga cta gaa atg acc	cag aat tcc tac aga	gcc aag gac cct	5776
Val Ala Arg Leu Glu Met Thr	Gln Asn Ser Tyr Arg	Ala Lys Asp Pro	
1885	1890	1895	

atc	ctg	gct	ctc	cgg	agg	gct	tta	cta	agc	ctc	aac	aaa	aga	cca	gat	5824
Ile	Leu	Ala	Leu	Arg	Arg	Ala	Leu	Leu	Ser	Leu	Asn	Lys	Arg	Pro	Asp	
1900						1905				1910					1915	
tac	aat	gaa	atg	gtt	gga	gaa	tgc	tgg	ctg	cag	agt	gcc	agg	gta	gct	5872
Tyr	Asn	Glu	Met	Val	Gly	Glu	Cys	Trp	Leu	Gln	Ser	Ala	Arg	Val	Ala	
						1920			1925					1930		
aga	aag	gct	ggt	cac	cac	cag	aca	gcc	tac	aat	gct	ctc	ctt	aat	gca	5920
Arg	Lys	Ala	Gly	His	His	Gln	Thr	Ala	Tyr	Asn	Ala	Leu	Leu	Asn	Ala	
						1935			1940					1945		
ggg	gaa	tca	cga	ctc	gct	gaa	ctg	tac	gtg	gaa	agg	gca	aag	tgg	ctc	5968
Gly	Glu	Ser	Arg	Leu	Ala	Glu	Leu	Tyr	Val	Glu	Arg	Ala	Lys	Trp	Leu	
						1950			1955					1960		
tgg	tcc	aag	ggt	gat	gtt	cac	cag	gca	cta	att	gtt	ctt	caa	aaa	ggt	6016
Trp	Ser	Lys	Gly	Asp	Val	His	Gln	Ala	Leu	Ile	Val	Leu	Gln	Lys	Gly	
						1965			1970					1975		
gtt	gaa	tta	tgt	ttt	cct	gaa	aat	gaa	acc	cca	cct	gag	ggt	aag	aac	6064
Val	Glu	Leu	Cys	Phe	Pro	Glu	Asn	Glu	Thr	Pro	Pro	Glu	Gly	Lys	Asn	
						1980			1985					1990		
1995																
atg	tta	atc	cat	ggt	cga	gct	atg	cta	cta	gtg	ggc	cga	ttt	atg	gaa	6112
Met	Leu	Ile	His	Gly	Arg	Ala	Met	Leu	Leu	Val	Gly	Arg	Phe	Met	Glu	
						2000			2005					2010		
gaa	aca	gct	aac	ttt	gaa	agc	aat	gca	att	atg	aaa	aaa	tat	aag	gat	6160
Glu	Thr	Ala	Asn	Phe	Glu	Ser	Asn	Ala	Ile	Met	Lys	Lys	Tyr	Lys	Asp	
						2015			2020					2025		
gtg	acc	gcg	tgc	ctg	cca	gaa	tgg	gag	gat	ggg	cat	ttt	tac	ctt	gcc	6208
Val	Thr	Ala	Cys	Leu	Pro	Glu	Trp	Glu	Asp	Gly	His	Phe	Tyr	Leu	Ala	
						2030			2035					2040		
aag	tac	tat	gac	aaa	ttg	atg	ccc	atg	gtc	aca	gac	aac	aaa	atg	gaa	6256
Lys	Tyr	Tyr	Asp	Lys	Leu	Met	Pro	Met	Val	Thr	Asp	Asn	Lys	Met	Glu	
						2045			2050					2055		
aag	caa	ggt	gat	ctc	atc	cgg	tat	ata	gtt	ctt	cat	ttt	ggc	aga	tct	6304
Lys	Gln	Gly	Asp	Leu	Ile	Arg	Tyr	Ile	Val	Leu	His	Phe	Gly	Arg	Ser	
						2060			2065					2070		
															2075	
cta	caa	tat	gga	aat	cag	ttc	ata	tat	cag	tca	atg	cca	cga	atg	tta	6352
Leu	Gln	Tyr	Gly	Asn	Gln	Phe	Ile	Tyr	Gln	Ser	Met	Pro	Arg	Met	Leu	
						2080			2085					2090		
act	cta	tgg	ctt	gat	tat	ggt	aca	aag	gca	tat	gaa	tgg	gaa	aaa	gct	6400
Thr	Leu	Trp	Leu	Asp	Tyr	Gly	Thr	Lys	Ala	Tyr	Glu	Trp	Glu	Lys	Ala	
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ggc	cgc	tcc	gat	cgt	gta	caa	atg	agg	aat	gat	ttg	ggt	aaa	ata	aac	6448
Gly	Arg	Ser	Asp	Arg	Val	Gln	Met	Arg	Asn	Asp	Leu	Gly	Lys	Ile	Asn	
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aag	gtt	atc	aca	gag	cat	aca	aac	tat	tta	gct	cca	tat	caa	ttt	ttg	6496
Lys	Val	Ile	Thr	Glu	His	Thr	Asn	Tyr	Leu	Ala	Pro	Tyr	Gln	Phe	Leu	
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act	gct	ttt	tca	caa	ttg	atc	tct	cga	att	tgt	cat	tct	cac	gat	gaa	6544
Thr	Ala	Phe	Ser	Gln	Leu	Ile	Ser	Arg	Ile	Cys	His	Ser	His	Asp	Glu	
						2140			2145					2150		
															2155	

gtt ttt gtt gtc ttg	atg gaa ata ata gcc	aaa gta ttt cta gcc	tat	6592
Val Phe Val Val Leu	Met Glu Ile Ile Ala	Lys Val Phe Leu Ala	Tyr	
2160	2165	2170		
cct caa caa gca	atg tgg atg atg aca	gct gtg tca aag tca	tct tat	6640
Pro Gln Gln Ala	Met Trp Met Met Thr	Ala Val Ser Lys Ser	Ser Tyr	
2175	2180	2185		
ccc atg cgt	gtg aac aga tgc aag	gaa atc ctc aat aaa	gct att cat	6688
Pro Met Arg	Val Asn Arg Cys Lys	Glu Ile Leu Asn Lys	Ala Ile His	
2190	2195	2200		
atg aaa aaa tcc tta gag aag	ttt gtt gga gat gca	act cgc cta aca		6736
Met Lys Lys Ser Leu Glu Lys	Phe Val Gly Asp Ala	Thr Arg Leu Thr		
2205	2210	2215		
gat aag ctt cta gaa ttg	tgc aat aaa ccg gtt	gat gga agt agt tcc		6784
Asp Lys Leu Leu Glu Leu	Cys Asn Lys Pro Val	Asp Gly Ser Ser Ser		
2220	2225	2230	2235	
aca tta agc atg agc	act cat ttt aaa atg	ctt aaa aag ctg gta	gaa	6832
Thr Leu Ser Met Ser	Thr His Phe Lys Met	Leu Lys Lys Leu Val	Glu	
2240	2245	2250		
gaa gca aca ttt	agt gaa atc ctc att	cct cta caa tca gtc	atg ata	6880
Glu Ala Thr Phe Ser	Glu Ile Leu Ile Pro	Leu Gln Ser Val	Met Ile	
2255	2260	2265		
cct aca ctt cca tca att ctg ggt	acc cat gct aac cat	gct agc cat		6928
Pro Thr Leu Pro Ser Ile Leu Gly	Thr His Ala Asn His	Ala Ser His		
2270	2275	2280		
gaa cca ttt cct gga cat tgg	gcc tat att gca ggg	ttt gat gat atg		6976
Glu Pro Phe Pro Gly His Trp	Ala Tyr Ile Ala Gly	Phe Asp Asp Met		
2285	2290	2295		
gtg gaa att ctt gct tct	ctt cag aaa cca aag	aag att tct tta aaa		7024
Val Glu Ile Leu Ala Ser	Leu Gln Lys Pro Lys	Lys Ile Ser Leu Lys		
2300	2305	2310	2315	
ggc tca gat gga aag	ttc tac atc atg atg	tgt aag cca aaa gat gac		7072
Gly Ser Asp Gly Lys	Phe Tyr Ile Met Met	Cys Lys Pro Lys Asp Asp		
2320	2325	2330		
ctg aga aag gat	tgt aga cta atg gaa	ttc aat tcc ttg att	aat aag	7120
Leu Arg Lys Asp Cys Arg Leu Met Glu	Phe Asn Ser Leu Ile Asn Lys			
2335	2340	2345		
tgc tta aga aaa gat gca gag tct	cgt aga aga gaa ctt	cat att cga		7168
Cys Leu Arg Lys Asp Ala Glu Ser	Arg Arg Arg Glu Leu His Ile Arg			
2350	2355	2360		
aca tat gca gtt att cca cta	aat gat gaa tgt ggg	att att gaa tgg		7216
Thr Tyr Ala Val Ile Pro Leu	Asn Asp Glu Cys Gly	Ile Ile Glu Trp		
2365	2370	2375		
gtg aac aac act gct ggt	ttg aga cct att ctg	acc aaa cta tat aaa		7264
Val Asn Asn Thr Ala Gly	Leu Arg Pro Ile Leu	Thr Lys Leu Tyr Lys		
2380	2385	2390	2395	
gaa aag gga gtg tat	atg aca gga aaa gaa	ctt cgc cag tgt atg	cta	7312
Glu Lys Gly Val Tyr	Met Thr Gly Lys Glu	Leu Arg Gln Cys Met	Leu	
2400	2405	2410		

cca aag tca gca	gct tta tct gaa aaa	ctc aaa gta ttc cga	gaa ttt	7360
Pro Lys Ser Ala	Ala Leu Ser Glu Lys	Leu Lys Val Phe Arg	Glu Phe	
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ctc ctg ccc	agg cat cct cct att	ttt cat gag tgg ttt	ctg aga aca	7408
Leu Leu Pro	Arg His Pro Pro Ile	Phe His Glu Trp Phe	Leu Arg Thr	
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ttc cct gat cct aca tca tgg	tac agt agt aga tca	gct tac tgc cgt		7456
Phe Pro Asp Pro Thr Ser Trp	Tyr Ser Ser Arg Ser	Ala Tyr Cys Arg		
2445	2450	2455		
tcc act gca gta atg tca	atg gtt tat att	ctg ggg ctt gga gac		7504
Ser Thr Ala Val Met Ser	Met Val Gly Tyr Ile	Leu Gly Leu Gly Asp		
2460	2465	2470	2475	
cgt cat ggt gaa aat	att ctc ttt gat tct	ttg act ggt gaa tgc	gta	7552
Arg His Gly Glu Asn	Ile Leu Phe Asp Ser	Leu Thr Gly Glu Cys	Val	
2480	2485	2490		
cat gta gat ttc	aat tgt ctt ttc aat	aag gga gaa acc ttt	gaa gtt	7600
His Val Asp Phe Asn Cys Leu Phe Asn	Lys Gly Glu Thr Phe	Glu Val		
2495	2500	2505		
cca gaa att gtg cca ttt cgc ctg	act cat aat atg gtt	aat gga atg		7648
Pro Glu Ile Val Pro Phe Arg Leu	Thr His Asn Met Val	Asn Gly Met		
2510	2515	2520		
ggt cct atg gga aca gag ggt	ctt ttt cga aga gca	tgt gaa gtt aca		7696
Gly Pro Met Gly Thr Glu Gly	Leu Phe Arg Arg Ala	Cys Glu Val Thr		
2525	2530	2535		
atg agg ctg atg cgt gat	cag cga gag cct tta	atg agt gtc tta aag		7744
Met Arg Leu Met Arg Asp	Gln Arg Glu Pro Leu	Met Ser Val Leu Lys		
2540	2545	2550	2555	
act ttt cta cat gat	cct ctt gtg gaa tgg	agt aaa cca gtg aaa ggg		7792
Thr Phe Leu His Asp	Pro Leu Val Glu Trp	Ser Lys Pro Val Lys Gly		
2560	2565	2570		
cat tcc aaa gcg	cca ctg aat gaa act	gga gaa gtt gtc aat	gaa aag	7840
His Ser Lys Ala	Pro Leu Asn Glu Thr	Gly Glu Val Val Asn	Glu Lys	
2575	2580	2585		
gcc aag acc cat gtt ctt gac att	gag cag cga cta caa	ggt gta atc		7888
Ala Lys Thr His Val Leu Asp Ile	Glu Gln Arg Leu Gln	Gly Val Ile		
2590	2595	2600		
aag act cga aat aga gtg aca	gga ctg ccg tta tct	att gaa gga cat		7936
Lys Thr Arg Asn Arg Val	Gly Leu Pro Leu Ser	Ile Glu Gly His		
2605	2610	2615		
gtg cat tac ctt ata caa	gaa gct act gat gaa	aac tta cta tgc cag		7984
Val His Tyr Leu Ile Gln	Glu Ala Thr Asp Glu	Asn Leu Leu Cys Gln		
2620	2625	2630	2635	
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Met Tyr Leu Gly Trp	Thr Pro Tyr Met			
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<400> 2

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20 25 30

Pro Arg Gln Ile Leu Cys Gln Phe Ile Asp Arg Ile Leu Thr Asp Val
35 40 45

Asn Val Val Ala Val Glu Leu Val Lys Lys Thr Asp Ser Gln Pro Thr
50 55 60

Ser Val Met Leu Leu Asp Phe Ile Gln His Ile Met Lys Ser Ser Pro
65 70 75 80

Leu Met Phe Val Asn Val Ser Gly Ser His Glu Arg Lys Gly Ser Cys
85 90 95

Ile Glu Phe Ser Asn Trp Ile Ile Thr Arg Leu Leu Arg Ile Ala Ala
100 105 110

Thr Pro Ser Cys His Leu Leu His Lys Lys Ile Cys Glu Val Ile Cys
115 120 125

Ser Leu Leu Phe Leu Phe Lys Ser Lys Ser Pro Ala Ile Phe Gly Val
130 135 140

Leu Thr Lys Glu Leu Leu Gln Leu Phe Glu Asp Leu Val Tyr Leu His
145 150 155 160

Arg Arg Asn Val Met Gly His Ala Val Glu Trp Pro Val Val Met Ser
165 170 175

Arg Phe Leu Ser Gln Leu Asp Glu His Met Gly Tyr Leu Gln Ser Ala
180 185 190

Pro Leu Gln Leu Met Ser Met Gln Asn Leu Glu Phe Ile Glu Val Thr
195 200 205

Leu Leu Met Val Leu Thr Arg Ile Ile Ala Ile Val Phe Phe Arg Arg
210 215 220 240

Gln Glu Leu Leu Leu Trp Gln Ile Gly Cys Val Leu Leu Glu Tyr Gly
225 230 235 240

Ser Pro Lys Ile Lys Ser Leu Ala Ile Ser Phe Leu Thr Glu Leu Phe
245 250 255

Gln Leu Gly Gly Leu Pro Ala Gln Pro Ala Ser Thr Phe Phe Ser Ser
260 265 270

Phe Leu Glu Leu Leu Lys His Leu Val Glu Met Asp Thr Asp Gln Leu
275 280 285

Lys Leu Tyr Glu Glu Pro Leu Ser Lys Leu Ile Lys Thr Leu Phe Pro
290 295 300

Phe Glu Ala Glu Ala Tyr Arg Asn Ile Glu Pro Val Tyr Leu Asn Met
305 310 315 320

Leu Leu Glu Lys Leu Cys Val Met Phe Glu Asp Gly Val Leu Met Arg
325 330 335

Leu Lys Ser Asp Leu Leu Lys Ala Ala Leu Cys His Leu Leu Gln Tyr
340 345 350

Phe Leu Lys Phe Val Pro Ala Gly Tyr Glu Ser Ala Leu Gln Val Arg
355 360 365

Lys Val Tyr Val Arg Asn Ile Cys Lys Ala Leu Asp Val Leu Gly
370 375 380

Ile Glu Val Asp Ala Glu Tyr Leu Leu Gly Pro Leu Tyr Ala Ala Leu
385 390 395 400

Lys Met Glu Ser Met Glu Ile Ile Glu Glu Ile Gln Cys Gln Thr Gln
405 410 415

Gln Glu Asn Leu Ser Ser Asn Ser Asp Gly Ile Ser Pro Lys Arg Arg
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Arg Leu Ser Ser Ser Leu Asn Pro Ser Lys Arg Ala Pro Lys Gln Thr
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Glu Glu Ile Lys His Val Asp Met Asn Gln Lys Ser Ile Leu Trp Ser
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Ala Leu Lys Gln Lys Ala Glu Ser Leu Gln Ile Ser Leu Glu Tyr Ser
465 470 475 480

Gly Leu Lys Asn Pro Val Ile Glu Met Leu Glu Gly Ile Ala Val Val
485 490 495

Leu Gln Leu Thr Ala Leu Cys Thr Val His Cys Ser His Gln Asn Met
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Asn Cys Arg Thr Phe Lys Asp Cys Gln His Lys Ser Lys Lys Pro
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Ser Val Val Ile Thr Trp Met Ser Leu Asp Phe Tyr Thr Lys Val Leu
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Lys Ser Cys Arg Ser Leu Leu Glu Ser Val Gln Lys Leu Asp Leu Glu
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Ala Thr Ile Asp Lys Val Val Lys Ile Tyr Asp Ala Leu Ile Tyr Met
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Lys Leu Thr Thr Phe Ala Ala Asn Leu Leu Thr Leu Ser Cys Arg Ile
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Ser Asp Ser Tyr Ser Pro Gln Ala Gln Ser Arg Cys Val Phe Leu Leu
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Asn Trp Ala Leu Gln Ser Ser His Glu Val Ile Arg Ala Ser Cys Val
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Ser Gly Phe Phe Ile Leu Leu Gln Gln Asn Ser Cys Asn Arg Val
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Pro Lys Ile Leu Ile Asp Lys Val Lys Asp Asp Ser Asp Ile Val Lys
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Lys Glu Phe Ala Ser Ile Leu Gly Gln Leu Val Cys Thr Leu His Gly
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Met Phe Tyr Leu Thr Ser Ser Leu Thr Glu Pro Phe Ser Glu His Gly
725 730 735

His Val Asp Leu Phe Cys Arg Asn Leu Lys Ala Thr Ser Gln His Glu
740 745 750

Cys Ser Ser Ser Gln Leu Lys Ala Ser Val Cys Lys Pro Phe Leu Phe
755 760 765

Leu Leu Lys Lys Ile Pro Ser Pro Val Lys Leu Ala Phe Ile Asp
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Asn Leu His His Leu Cys Lys His Leu Asp Phe Arg Glu Asp Glu Thr
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Asp Val Lys Ala Val Leu Gly Thr Leu Leu Asn Leu Met Glu Asp Pro
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Asp Lys Asp Val Arg Val Ala Phe Ser Gly Asn Ile Lys His Ile Leu
820 825 830

Glu Ser Leu Asp Ser Glu Asp Gly Phe Ile Lys Glu Leu Phe Val Leu
835 840 845

Arg Met Lys Glu Ala Tyr Thr His Ala Gln Ile Ser Arg Asn Asn Glu
850 855 860

Leu Lys Asp Thr Leu Ile Leu Thr Thr Gly Asp Ile Gly Arg Ala Ala
865 870 875 880

Lys Gly Asp Leu Val Pro Phe Ala Leu Leu His Leu Leu His Cys Leu
885 890 895

Leu Ser Lys Ser Ala Ser Val Ser Gly Ala Ala Tyr Thr Glu Ile Arg
900 905 910

Ala Leu Val Ala Ala Lys Ser Val Lys Leu Gln Ser Phe Ser Gln
915 920 925

Tyr Lys Lys Pro Ile Cys Gln Phe Leu Val Glu Ser Leu His Ser Ser
930 935 940

Gln Met Thr Ala Leu Pro Asn Thr Pro Cys Gln Asn Ala Asp Val Arg
945 950 955 960

Lys Gln Asp Val Ala His Gln Arg Glu Met Ala Leu Asn Thr Leu Ser
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Glu Ile Ala Asn Val Phe Asp Phe Pro Asp Leu Asn Arg Phe Leu Thr
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Arg Thr Leu Gln Val Leu Leu Pro Asp Leu Ala Ala Lys Ala Ser Pro
995 1000 1005

Ala Ala Ser Ala Leu Ile Arg Thr Leu Gly Lys Gln Leu Asn Val
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His Tyr Leu Lys Asn Glu Thr Glu Ile Glu Leu Gly Ser Leu Leu
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Arg Gln Asp Phe Gln Gly Leu His Asn Glu Leu Leu Leu Arg Ile
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Gly Glu His Tyr Gln Gln Val Phe Asn Gly Leu Ser Ile Leu Ala
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Ser Phe Ala Ser Ser Asp Asp Pro Tyr Gln Gly Pro Arg Asp Ile
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Pro Glu Leu Cys Cys Arg Ala Trp Asp Cys Phe Val Arg Cys Leu
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Phe His Tyr Leu Ile Ile Glu Asn Arg Asp Ala Val Gln Asp Phe
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Leu His Glu Ile Tyr Phe Leu Pro Asp His Pro Glu Leu Lys Lys
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Ile Lys Ala Val Leu Gln Glu Tyr Arg Lys Glu Thr Ser Glu Ser
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Thr Asp Leu Gln Thr Thr Leu Gln Leu Ser Met Lys Ala Ile Gln
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His Glu Asn Val Asp Val Arg Ile His Ala Leu Thr Ser Leu Lys
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Glu Thr Leu Tyr Lys Asn Gln Glu Lys Leu Ile Lys Tyr Ala Thr
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Asp Ser Glu Thr Val Glu Pro Ile Ile Ser Gln Leu Val Thr Val
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Leu Leu Lys Gly Cys Gln Asp Ala Asn Ser Gln Ala Arg Leu Leu
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Cys Gly Glu Cys Leu Gly Glu Leu Gly Ala Ile Asp Pro Gly Arg
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Leu Asp Phe Ser Thr Thr Glu Thr Gln Gly Lys Asp Phe Thr Phe
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Val Thr Gly Val Glu Asp Ser Ser Phe Ala Tyr Gly Leu Leu Met
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Glu Leu Thr Arg Ala Tyr Leu Ala Tyr Ala Asp Asn Ser Arg Ala
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Asp Cys Arg Glu Met Glu Thr Asn Gly Pro Gly His Gln Leu Trp
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Arg Arg Phe Pro Glu His Val Arg Glu Ile Leu Glu Pro His Leu
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Asn Thr Arg Tyr Lys Ser Ser Gln Lys Ser Thr Asp Trp Ser Gly
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Val Lys Lys Pro Ile Tyr Leu Ser Lys Leu Gly Ser Asn Phe Ala
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His Asp Leu Ala Ser Lys Ile Phe Thr Cys Cys Ser Ile Met Met
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Lys His Asp Phe Lys Val Thr Ile Tyr Leu Leu Pro His Ile Leu
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Val Tyr Val Leu Leu Gly Cys Asn Gln Glu Asp Gln Gln Glu Val
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Tyr Ala Glu Ile Met Ala Val Leu Lys His Asp Asp Gln His Thr
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His Lys Phe Gln Ala Leu Lys Ala Glu Lys Cys Pro His Ser Lys
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Asp Thr Leu Ala Val Ala Ser Phe Arg Ser Lys Ala Tyr Thr Arg
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Ala Val Met His Phe Glu Ser Phe Ile Thr Glu Lys Lys Gln Asn
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Ile Gln Glu His Leu Gly Phe Leu Gln Lys Leu Tyr Ala Ala Met
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Glu Pro Ser Leu Lys Glu Gln Ile Leu Glu His Glu Ser Leu Gly
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Leu Leu Arg Asp Ala Thr Ala Cys Tyr Asp Arg Ala Ile Gln Leu
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Glu Pro Asp Gln Ile Ile His Tyr His Gly Val Val Lys Ser Met
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Leu Gly Leu Gly Gln Leu Ser Thr Val Ile Thr Gln Val Asn Gly
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Arg Val Glu Ala Ala Trp Lys Leu Ser Gln Trp Asp Leu Val Glu
1775 1780 1785

Asn Tyr Leu Ala Ala Asp Gly Lys Ser Thr Thr Trp Ser Val Arg
1790 1795 1800

Leu Gly Gln Leu Leu Leu Ser Ala Lys Lys Arg Asp Ile Thr Ala
1805 1810 1815

Phe Tyr Asp Ser Leu Lys Leu Val Arg Ala Glu Gln Ile Val Pro
1820 1825 1830

Leu Ser Ala Ala Ser Phe Glu Arg Gly Ser Tyr Gln Arg Gly Tyr
1835 1840 1845

Glu Tyr Ile Val Arg Leu His Met Leu Cys Glu Leu Glu His Ser
1850 1855 1860

Ile Lys Pro Leu Phe Gln His Ser Pro Gly Asp Ser Ser Gln Glu
1865 1870 1875

Asp Ser Leu Asn Trp Val Ala Arg Leu Glu Met Thr Gln Asn Ser
1880 1885 1890

Tyr Arg Ala Lys Asp Pro Ile Leu Ala Leu Arg Arg Ala Leu Leu
1895 1900 1905

Ser Leu Asn Lys Arg Pro Asp Tyr Asn Glu Met Val Gly Glu Cys
1910 1915 1920

Trp Leu Gln Ser Ala Arg Val Ala Arg Lys Ala Gly His His Gln
1925 1930 1935

Thr Ala Tyr Asn Ala Leu Leu Asn Ala Gly Glu Ser Arg Leu Ala
1940 1945 1950

Glu Leu Tyr Val Glu Arg Ala Lys Trp Leu Trp Ser Lys Gly Asp
1955 1960 1965

Val His Gln Ala Leu Ile Val Leu Gln Lys Gly Val Glu Leu Cys
1970 1975 1980

Phe Pro Glu Asn Glu Thr Pro Pro Glu Gly Lys Asn Met Leu Ile
1985 1990 1995

His Gly Arg Ala Met Leu Leu Val Gly Arg Phe Met Glu Glu Thr
2000 2005 2010

Ala Asn Phe Glu Ser Asn Ala Ile Met Lys Lys Tyr Lys Asp Val
2015 2020 2025

Thr Ala Cys Leu Pro Glu Trp Glu Asp Gly His Phe Tyr Leu Ala
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Lys Tyr Tyr Asp Lys Leu Met Pro Met Val Thr Asp Asn Lys Met
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Glu Lys Gln Gly Asp Leu Ile Arg Tyr Ile Val Leu His Phe Gly
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Arg Met Leu Thr Leu Trp Leu Asp Tyr Gly Thr Lys Ala Tyr Glu
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Trp Glu Lys Ala Gly Arg Ser Asp Arg Val Gln Met Arg Asn Asp
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Met Thr Ala Val Ser Lys Ser Ser Tyr Pro Met Arg Val Asn Arg
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Cys Lys Glu Ile Leu Asn Lys Ala Ile His Met Lys Lys Ser Leu
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Thr Leu Pro Ser Ile Leu Gly Thr His Ala Asn His Ala Ser His
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Glu Pro Phe Pro Gly His Trp Ala Tyr Ile Ala Gly Phe Asp Asp
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Met Val Glu Ile Leu Ala Ser Leu Gln Lys Pro Lys Lys Ile Ser
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Glu Leu His Ile Arg Thr Tyr Ala Val Ile Pro Leu Asn Asp Glu
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Cys Gly Ile Ile Glu Trp Val Asn Asn Thr Ala Gly Leu Arg Pro
2375 2380 2385

Ile Leu Thr Lys Leu Tyr Lys Glu Lys Gly Val Tyr Met Thr Gly
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Lys Glu Leu Arg Gln Cys Met Leu Pro Lys Ser Ala Ala Leu Ser
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Glu Lys Leu Lys Val Phe Arg Glu Phe Leu Leu Pro Arg His Pro
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Pro Ile Phe His Glu Trp Phe Leu Arg Thr Phe Pro Asp Pro Thr
2435 2440 2445

Ser Trp Tyr Ser Ser Arg Ser Ala Tyr Cys Arg Ser Thr Ala Val
2450 2455 2460

Met Ser Met Val Gly Tyr Ile Leu Gly Leu Gly Asp Arg His Gly
2465 2470 2475

Glu Asn Ile Leu Phe Asp Ser Leu Thr Gly Glu Cys Val His Val
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Asp Phe Asn Cys Leu Phe Asn Lys Gly Glu Thr Phe Glu Val Pro
2495 2500 2505

Glu Ile Val Pro Phe Arg Leu Thr His Asn Met Val Asn Gly Met
2510 2515 2520

Gly Pro Met Gly Thr Glu Gly Leu Phe Arg Arg Ala Cys Glu Val.
2525 2530 2535

Thr Met Arg Leu Met Arg Asp Gln Arg Glu Pro Leu Met Ser Val
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Leu Lys Thr Phe Leu His Asp Pro Leu Val Glu Trp Ser Lys Pro
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Val Lys Gly His Ser Lys Ala Pro Leu Asn Glu Thr Gly Glu Val
2570 2575 2580

Val Asn Glu Lys Ala Lys Thr His Val Leu Asp Ile Glu Gln Arg
2585 2590 2595

Leu Gln Gly Val Ile Lys Thr Arg Asn Arg Val Thr Gly Leu Pro
2600 2605 2610

Leu Ser Ile Glu Gly His Val His Tyr Leu Ile Gln Glu Ala Thr
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tcatttcctc ttttatttagc cgtaaaaatag cttatttct ctcctactac ctttcaacaa 240
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Met Ser Gln His
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Ala Lys Arg Lys Ala Gly Ser Leu Asp Leu Ser Pro Arg Gly Leu Asp
5 10 15 20
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Asp Arg Gln Ala Phe Gly Gln Leu Leu Lys Glu Val Leu Ala Leu Asp
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Lys Glu His Glu Leu Gly Arg Ser Asn Ser Leu Pro Ser Met Thr Ser
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gag ctt gtt gaa gtt tta att gaa gtt ggt ctt cta gct ttt aaa cat 788
Glu Leu Val Glu Val Leu Ile Glu Val Gly Leu Leu Ala Phe Lys His
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Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met Leu Lys Glu Ala
70 75 80
cat ctc tct cta caa gcg tta atg cta atc tta aaa agg tct ccg aca 884
His Leu Ser Leu Gln Ala Leu Met Leu Ile Leu Lys Arg Ser Pro Thr
85 90 95 100
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ccc agg act ata tca ttg ttt gct gat att cgt ttt att aag tta ttt Pro Arg Thr Ile Ser Leu Phe Ala Asp Ile Arg Phe Ile Lys Leu Phe 120	125	130	980
gac tca tta aaa gag ttt cat aag cta att tat cag cta atc agt gaa Asp Ser Leu Lys Glu Phe His Lys Leu Ile Tyr Gln Leu Ile Ser Glu 135	140	145	1028
aag tca ttc cta tgg gac tta tat gct tcg ttt atg cgt tat tgg aaa Lys Ser Phe Leu Trp Asp Leu Tyr Ala Ser Phe Met Arg Tyr Trp Lys 150	155	160	1076
tat tat att aca aac gtt tct tct ata gtt ctc caa atc act aat gct Tyr Tyr Ile Thr Asn Val Ser Ser Ile Val Leu Gln Ile Thr Asn Ala 165	170	175	1124
aca ttc cct tac aag atg ccc tca ccc aat tct caa cca ttg cag agt Thr Phe Pro Tyr Lys Met Pro Ser Pro Asn Ser Gln Pro Leu Gln Ser 185	190	195	1172
atc tcc cca aat tat cca acc cat cga gag gac aaa ttt gat tta ctt Ile Ser Pro Asn Tyr Pro Thr His Arg Glu Asp Lys Phe Asp Leu Leu 200	205	210	1220
atc att aat ata gag gag gct tgt aca ttt ttc ttt gaa agt gcc cat Ile Ile Asn Ile Glu Glu Ala Cys Thr Phe Phe Glu Ser Ala His 215	220	225	1268
ttt ttt gca caa tgc tca tat tta aag aaa tcc aat ttt cct agt cca Phe Phe Ala Gln Cys Ser Tyr Leu Lys Lys Ser Asn Phe Pro Ser Pro 230	235	240	1316
cct ctc ttt aca gcg tgg act tgg atc aag cca tgt ttt ttt aat ttt Pro Leu Phe Thr Ala Trp Thr Trp Ile Lys Pro Cys Phe Phe Asn Phe 245	250	255	1364
gtt att tta tta aaa cga atc agc atc gga gac tca cag ctc ttt cta Val Ile Leu Leu Lys Arg Ile Ser Ile Gly Asp Ser Gln Leu Phe Leu 265	270	275	1412
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atg tcc tcc atc aac tta aca ttg gga tca ttg aag aaa act tat aca Met Ser Ser Ile Asn Leu Thr Leu Gly Ser Leu Lys Lys Thr Tyr Thr 310	315	320	1556
gtt gct aat act gct ata tct ctt ttt ctc tct tta ttt gtt tta Val Ala Asn Thr Ala Ile Ser Leu Phe Phe Leu Ser Leu Phe Val Leu 325	330	335	1604
ccc aaa act gta gct ggt cta ttc tat cct ttt ggg gtt tcc tta ctt Pro Lys Thr Val Ala Gly Leu Phe Tyr Pro Phe Gly Val Ser Leu Leu 345	350	355	1652
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Ser Asp Phe Lys Val Leu Glu Gln Leu Glu Pro Asp Ser Asp Leu Lys			
360	365	370	
aag gca ata ata tta ttt aag tgc aga tac caa agt tca gaa ata gat		1748	
Lys Ala Ile Ile Leu Phe Lys Cys Arg Tyr Gln Ser Ser Glu Ile Asp			
375	380	385	
caa aca act ctc cgt gct ttt ggc gaa att tgt act ggt aaa ctt gaa		1796	
Gln Thr Thr Leu Arg Ala Phe Gly Glu Ile Cys Thr Gly Lys Leu Glu			
390	395	400	
aac acg ttg ttt tct aac tct gaa tta aac ctt ttt ctt tta cat tat		1844	
Asn Thr Leu Phe Ser Asn Ser Glu Leu Asn Leu Phe Leu Leu His Tyr			
405	410	415	420
ctt tcc ttg gac aat gac ttg tca aat att ctt aaa gtg gat ttc cag		1892	
Leu Ser Leu Asp Asn Asp Leu Ser Asn Ile Leu Lys Val Asp Phe Gln			
425	430	435	
aat ggt cat aac ata tgt aca ttt gca aaa tgg tgt ata aac aac aac		1940	
Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys Ile Asn Asn Asn			
440	445	450	
tta gat gaa ccg tct aat tta aag cac ttt cgt gaa atg tta gat tat		1988	
Leu Asp Glu Pro Ser Asn Leu Lys His Phe Arg Glu Met Leu Asp Tyr			
455	460	465	
tat agc tct cat aat gtt aca ata agt gag gac gac ctg aag aac ttc		2036	
Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp Leu Lys Asn Phe			
470	475	480	
tct tta gtt ttg tgt act cat gtt gca aag gtg aat gag aaa aca aat		2084	
Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn Glu Lys Thr Asn			
485	490	495	500
agt att ttc cgc aca tat gaa gta cat ggt tgt gaa gtt tgt aac tca		2132	
Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu Val Cys Asn Ser			
505	510	515	
ttt tgt tta cta ttt gat gag cgg tcg cct ttt aaa att cct tat cac		2180	
Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys Ile Pro Tyr His			
520	525	530	
gaa ttg ttt tgt gca ttg cta aaa aat ccc gac ata att tcc tct tct		2228	
Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile Ile Ser Ser Ser			
535	540	545	
gtt aaa caa tca ttg ttg ctt gat ggc ttt ttt cgg tgg agc cag cat		2276	
Val Lys Gln Ser Leu Leu Leu Asp Gly Phe Arg Trp Ser Gln His			
550	555	560	
tgc tca aac ttt aat aaa gaa tca atg tta agt tta aga gaa ttt att		2324	
Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu Arg Glu Phe Ile			
565	570	575	580
atg aaa gca tta gcc agt act tca aga tgt tta cgt gtt gtt gct gca		2372	
Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg Val Val Ala Ala			
585	590	595	
aaa gtt ttg ccc att ttc att aag gga cct aat aat ctt gat ata gtt		2420	
Lys Val Leu Pro Ile Phe Ile Lys Gly Pro Asn Asn Leu Asp Ile Val			
600	605	610	

gaa ttt cac aag gaa agt aaa gcc ttg att ttt aat acg ttg aaa ata Glu Phe His Lys Glu Ser Lys Ala Leu Ile Phe Asn Thr Leu Lys Ile	2468
615 620 625	
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630 635 640	
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645 650 655 660	
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665 670 675	
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680 685 690	
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710 715 720	
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725 730 735 740	
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745 750 755	
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760 765 770	
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775 780 785	
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790 795 800	
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805 810 815 820	
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825 830 835	
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Gly Glu Glu Ser	Leu Lys Phe Ile Leu	Asp Phe Met Gln Ser	Gln	
1135	1140	1145		
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Leu Ile Pro Ala	Phe Leu Val Thr Thr	Asp Thr Lys Ala Gln	Gly	
1150	1155	1160		
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Phe Leu Ala Tyr	Ala Leu Gln Glu Phe	Leu Lys Leu Gly Gly	Phe	
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Pro Phe Leu Thr	Ser Lys Tyr His Leu	Thr Pro Ile Pro Lys	Ile	
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Asp Ile Arg Tyr	Pro Ile Tyr Lys Glu	Asn Val Thr Ile His	Thr	
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Trp Met Gln Leu	Phe Ser Leu Lys Leu	Met Glu Tyr Ala His	Ser	
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Asp Gln Glu Val	Asn Ile Pro Cys Phe	Leu Leu Pro Phe Leu	Val	
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Leu Asn Val Ile	Leu Thr Glu Ser Glu	Leu Glu Val Asn Lys	Val	
1285	1290	1295		
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Ile Glu Glu Phe	Gln Leu Val Ile Asn	Gln Pro Gly Pro Asp	Gly	
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Phe Phe Lys Ile	Val Asp Tyr Leu Asn	Lys Trp Leu Arg Met	Arg	
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Ile Ser Lys Val	Glu Ser Phe Leu Ser	Arg Phe Pro Ser Lys	Thr	
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Leu Gly Ile Val	Ser Leu Asn Cys Gly	Phe His Ala Arg Ala	Leu	
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Ile Asp Asp Pro	Asp Glu Ile Glu Ala	Val Ser Leu Asn Phe	His	
1435	1440	1445		
gat tac tcg ttt	gat caa caa ctc ctt	tta cat gaa aat tca	gga	4967
Asp Tyr Ser Phe	Asp Gln Gln Leu Leu	Leu His Glu Asn Ser	Gly	
1450	1455	1460		
aca tgg gac tcg	gct ttg agt tgt tac	gaa att att att caa	aag	5012
Thr Trp Asp Ser	Ala Leu Ser Cys Tyr	Glu Ile Ile Ile Gln	Lys	
1465	1470	1475		
gat cct gaa aat	aaa aag gcg aaa atc	ggt ttg ctt aac agc	atg	5057
Asp Pro Glu Asn	Lys Lys Ala Lys Ile	Gly Leu Leu Asn Ser	Met	
1480	1485	1490		
ctg caa tcg ggg	cat tat gaa tct ctt	gtt ttg agt tta gat	tct	5102
Leu Gln Ser Gly	His Tyr Glu Ser Leu	Val Leu Ser Leu Asp	Ser	
1495	1500	1505		
ttt ata atc aat	gac aac cac gag tat	tcg aag atg tta aat	ttg	5147
Phe Ile Ile Asn	Asp Asn His Glu Tyr	Ser Lys Met Leu Asn	Leu	
1510	1515	1520		
ggt att gaa gct	tca tgg cgt tcg cta	tct att gat tcg tta	aaa	5192
Gly Ile Glu Ala	Ser Trp Arg Ser Leu	Ser Ile Asp Ser Leu	Lys	
1525	1530	1535		
aag tgt ctt tca	aaa agc aac ttg gaa	tct ttc gaa gct aaa	ttg	5237
Lys Cys Leu Ser	Lys Ser Asn Leu Glu	Ser Phe Glu Ala Lys	Leu	
1540	1545	1550		
ggt agc ata ttt	tac caa tac cta cgg	aag gat tct ttt gct	gaa	5282
Gly Ser Ile Phe	Tyr Gln Tyr Leu Arg	Lys Asp Ser Phe Ala	Glu	
1555	1560	1565		
ttg acg gag cgg	ctg caa ccc ttg tac	gtt gat gct gct aca	gca	5327
Leu Thr Glu Arg	Leu Gln Pro Leu Tyr	Val Asp Ala Ala Thr	Ala	
1570	1575	1580		
att gca aac aca	ggc gcc cat tca gcc	tat gat tgt tat gat	att	5372
Ile Ala Asn Thr	Gly Ala His Ser Ala	Tyr Asp Cys Tyr Asp	Ile	
1585	1590	1595		

tta tct aag ctg cac gca att aat gac	ttt agt agg att gct gaa	5417
Leu Ser Lys Leu His Ala Ile Asn Asp	Phe Ser Arg Ile Ala Glu	
1600	1605	1610
act gac gga att gtt tcc gac aat ctt	gat att gtt ctt cgc cgt	5462
Thr Asp Gly Ile Val Ser Asp Asn Leu	Asp Ile Val Leu Arg Arg	
1615	1620	1625
cgg ctt agc caa gta gct ccg tac ggt	aaa ttc aag cac caa atc	5507
Arg Leu Ser Gln Val Ala Pro Tyr Gly	Lys Phe Lys His Gln Ile	
1630	1635	1640
ctg tcc act cac tta gtt ggc tat gaa	aaa ttt gaa aac acg aag	5552
Leu Ser Thr His Leu Val Gly Tyr Glu	Lys Phe Glu Asn Thr Lys	
1645	1650	1655
aaa act gct gaa ata tat ctc gag att	gca aga ata tct cga aaa	5597
Lys Thr Ala Glu Ile Tyr Leu Glu Ile	Ala Arg Ile Ser Arg Lys	
1660	1665	1670
aat ggt caa ttt caa aga gcc ttc aat	gcc atc ctc aaa gca atg	5642
Asn Gly Gln Phe Gln Arg Ala Phe Asn	Ala Ile Leu Lys Ala Met	
1675	1680	1685
gat tta gat aaa ccg cta gca aca ata	gag cac gca caa tgg tgg	5687
Asp Leu Asp Lys Pro Leu Ala Thr Ile	Glu His Ala Gln Trp Trp	
1690	1695	1700
tgg cat caa ggg caa cat cgt aaa gct	att tct gaa ttg aat ttt	5732
Trp His Gln Gly Gln His Arg Lys Ala	Ile Ser Glu Leu Asn Phe	
1705	1710	1715
tcg ctt aat aac aac atg ttt gat ttg	gtt gat gag cat gaa gaa	5777
Ser Leu Asn Asn Asn Met Phe Asp Leu	Val Asp Glu His Glu Glu	
1720	1725	1730
aga cct aaa aat cgt aaa gaa act tta	gga aat cca ctt aaa gga	5822
Arg Pro Lys Asn Arg Lys Glu Thr Leu	Gly Asn Pro Leu Lys Gly	
1735	1740	1745
aaa gtg ttc ttg aaa ctt aca aaa tgg	ctc gga aaa gct ggc caa	5867
Lys Val Phe Leu Lys Leu Thr Lys Trp	Leu Gly Lys Ala Gly Gln	
1750	1755	1760
ctg gga ttg aag gat ttg gag acg tat	tat cat aaa gcg gta gag	5912
Leu Gly Leu Lys Asp Leu Glu Thr Tyr	Tyr His Lys Ala Val Glu	
1765	1770	1775
att tac tca gaa tgt gag aat acg cat	tat tat ctt ggc cat cat	5957
Ile Tyr Ser Glu Cys Glu Asn Thr His	Tyr Tyr Leu Gly His His	
1780	1785	1790
cga gtt tta atg tat gaa gaa gaa caa	aag ctc cca gtt aat gaa	6002
Arg Val Leu Met Tyr Glu Glu Glu Gln	Lys Leu Pro Val Asn Glu	
1795	1800	1805
cag agc gaa cga ttt tta agt ggt gag	tta gta act cgc ata att	6047
Gln Ser Glu Arg Phe Leu Ser Gly Glu	Leu Val Thr Arg Ile Ile	
1810	1815	1820
aac gaa ttt ggt cga tct ttg tac tat	ggt aca aat cat ata tat	6092
Asn Glu Phe Gly Arg Ser Leu Tyr Tyr	Gly Thr Asn His Ile Tyr	
1825	1830	1835

gaa agt atg cca	aaa ttg ctc aca ctg	tgg ctt gat ttt ggg	gcc	6137
Glu Ser Met Pro	Lys Leu Leu Thr Leu	Trp Leu Asp Phe Gly	Ala	
1840	1845	1850		
gaa gaa ctt cgc	tta tct aaa gat gac	ggc gaa aag tac ttt	cgt	6182
Glu Glu Leu Arg	Leu Ser Lys Asp Asp	Gly Glu Lys Tyr Phe	Arg	
1855	1860	1865		
gaa cac att atc	tct tcg aga aaa aaa	tct ttg gaa ctt atg	aat	6227
Glu His Ile Ile	Ser Ser Arg Lys Lys	Ser Leu Glu Leu Met	Asn	
1870	1875	1880		
tcg aat gtt tgt	cgc ctt tct atg aaa	att cct caa tac ttt	ttt	6272
Ser Asn Val Cys	Arg Leu Ser Met Lys	Ile Pro Gln Tyr Phe	Phe	
1885	1890	1895		
ctg gtt gca tta	tcc caa atg ata tcc	aga gta tgc cat cca	aat	6317
Leu Val Ala Leu	Ser Gln Met Ile Ser	Arg Val Cys His Pro	Asn	
1900	1905	1910		
aat aaa gtt tat	aaa att ttg gaa cat	ata att gca aac gtt	gta	6362
Asn Lys Val Tyr	Lys Ile Leu Glu His	Ile Ile Ala Asn Val	Val	
1915	1920	1925		
gca tct tat cct	ggg gag acg cta tgg	caa tta atg gca aca	ata	6407
Ala Ser Tyr Pro	Gly Glu Thr Leu Trp	Gln Leu Met Ala Thr	Ile	
1930	1935	1940		
aaa tcg act tct	caa aag cgc tcg ctt	cgt gga aaa agc att	tta	6452
Lys Ser Thr Ser	Gln Lys Arg Ser Leu	Arg Gly Lys Ser Ile	Leu	
1945	1950	1955		
aat gtt tta cat	tct agg aag ctt tct	atg tct tcc aaa gtt	gat	6497
Asn Val Leu His	Ser Arg Lys Leu Ser	Met Ser Ser Lys Val	Asp	
1960	1965	1970		
ata aaa gca ctc	agt caa tct gca att	ctc att act gaa aag	tta	6542
Ile Lys Ala Leu	Ser Gln Ser Ala Ile	Leu Ile Thr Glu Lys	Leu	
1975	1980	1985		
atc aat ttg tgc	aat aca agg att aac	agt aaa tct gta aaa	atg	6587
Ile Asn Leu Cys	Asn Thr Arg Ile Asn	Ser Lys Ser Val Lys	Met	
1990	1995	2000		
agc tta aag gat	cat ttt cgg ctt tct	ttt gat gat ccg gta	gat	6632
Ser Leu Lys Asp	His Phe Arg Leu Ser	Phe Asp Asp Pro Val	Asp	
2005	2010	2015		
tta gtc att cct	gct aaa tca ttt tta	gac att act tta cca	gct	6677
Leu Val Ile Pro	Ala Lys Ser Phe Leu	Asp Ile Thr Leu Pro	Ala	
2020	2025	2030		
aaa gat gct aac	aga gct agt cat tat	cca ttt cca aaa act	cag	6722
Lys Asp Ala Asn	Arg Ala Ser His Tyr	Pro Phe Pro Lys Thr	Gln	
2035	2040	2045		
cct act ctg ttg	aaa ttt gag gat gag	gtg gat ata atg aac	tct	6767
Pro Thr Leu Leu	Lys Phe Glu Asp Glu	Val Asp Ile Met Asn	Ser	
2050	2055	2060		
ctt caa aaa cca	aga aaa gtg tac gtt	aga ggt acg gat ggc	aac	6812
Leu Gln Lys Pro	Arg Lys Val Tyr Val	Arg Gly Thr Asp Gly	Asn	
2065	2070	2075		

tta tac cca ttc	ttg tgc aaa ccc aaa	gat gat ctt cgt aag	gat	6857
Leu Tyr Pro Phe	Leu Cys Lys Pro Lys	Asp Asp Leu Arg Lys	Asp	
2080	2085	2090		
gct aga ttg atg	gaa ttt aat aat ctt	att tgt aaa ata ttg	agg	6902
Ala Arg Leu Met	Glu Phe Asn Asn Leu	Ile Cys Lys Ile Leu	Arg	
2095	2100	2105		
aaa gat caa gaa	gcg aac aga agg aac	ttg tgt att aga act	tat	6947
Lys Asp Gln Glu	Ala Asn Arg Arg Asn	Leu Cys Ile Arg Thr	Tyr	
2110	2115	2120		
gtt gtt att cct	tta aat gaa gaa tgc	gga ttt atc gaa tgg	gta	6992
Val Val Ile Pro	Leu Asn Glu Glu Cys	Gly Phe Ile Glu Trp	Val	
2125	2130	2135		
aat cat act cgt	cca ttt aga gaa att	ttg tta aaa agc tat	aga	7037
Asn His Thr Arg	Pro Phe Arg Glu Ile	Leu Leu Lys Ser Tyr	Arg	
2140	2145	2150		
cag aaa aac att	ccc ata tca tat caa	gaa atc aaa gtt gat	tta	7082
Gln Lys Asn Ile	Pro Ile Ser Tyr Gln	Glu Ile Lys Val Asp	Leu	
2155	2160	2165		
gac ttt gca ctg	cga agt cct aac cct	ggt gat ata ttt gaa	aag	7127
Asp Phe Ala Leu	Arg Ser Pro Asn Pro	Gly Asp Ile Phe Glu	Lys	
2170	2175	2180		
aaa atc tta ccg	aaa ttt cct cca gtt	ttt tat gag tgg ttt	gtt	7172
Lys Ile Leu Pro	Lys Phe Pro Pro Val	Phe Tyr Glu Trp Phe	Val	
2185	2190	2195		
gaa tct ttc cca	gaa cca aat aat tgg	gtt act agt aga caa	aac	7217
Glu Ser Phe Pro	Glu Pro Asn Asn Trp	Val Thr Ser Arg Gln	Asn	
2200	2205	2210		
tat tgc cga act	tta gca gta atg tca	ata gtt ggc tac gtt	ttg	7262
Tyr Cys Arg Thr	Leu Ala Val Met Ser	Ile Val Gly Tyr Val	Leu	
2215	2220	2225		
ggt ttg gga gat	cgc cat ggc gaa aac	ata ttg ttt gat gaa	ttt	7307
Gly Leu Gly Asp	Arg His Gly Glu Asn	Ile Leu Phe Asp Glu	Phe	
2230	2235	2240		
aca ggt gaa gct	atc cat gtc gat ttc	aac tgt ctt ttt gat	aaa	7352
Thr Gly Glu Ala	Ile His Val Asp Phe	Asn Cys Leu Phe Asp	Lys	
2245	2250	2255		
ggt ctt act ttt	gaa aaa cct gaa aag	gtg ccg ttc aga tta	act	7397
Gly Leu Thr Phe	Glu Lys Pro Glu Lys	Val Pro Phe Arg Leu	Thr	
2260	2265	2270		
cat aat atg gta	gat gca atg ggt ccg	aca ggt tat gaa ggg	ggt	7442
His Asn Met Val	Asp Ala Met Gly Pro	Thr Gly Tyr Glu Gly	Gly	
2275	2280	2285		
ttc agg aaa gct	agc gaa ata acg atg	cgg ctt ctt cgc tca	aac	7487
Phe Arg Lys Ala	Ser Glu Ile Thr Met	Arg Leu Leu Arg Ser	Asn	
2290	2295	2300		
caa gat aca ttg	atg agc gta cta gag	tct ttc cta cat gat	cct	7532
Gln Asp Thr Leu	Met Ser Val Leu Glu	Ser Phe Leu His Asp	Pro	
2305	2310	2315		

tta gtc gag tgg	aat aga aag aag tcg	tca agc aag tac ccg	aat	7577
Leu Val Glu Trp	Asn Arg Lys Lys Ser	Ser Ser Lys Tyr Pro	Asn	
2320	2325	2330		
aat gaa gca aat	gaa gtt ttg gat ata	att cgc aaa aaa ttt	caa	7622
Asn Glu Ala Asn	Glu Val Leu Asp Ile	Ile Arg Lys Lys Phe	Gln	
2335	2340	2345		
ggc ttt atg cca	ggg gag acg ata cct	tta tct att gaa ggg	caa	7667
Gly Phe Met Pro	Gly Glu Thr Ile Pro	Leu Ser Ile Gly	Gln	
2350	2355	2360		
att caa gaa ttg	atc aaa tct gct gtc	aac cca aaa aac ctg	gta	7712
Ile Gln Glu Leu	Ile Lys Ser Ala Val	Asn Pro Lys Asn Leu	Val	
2365	2370	2375		
gaa atg tac att	ggt tgg gct gct tat	ttc tagcattta ctaacaaaaa		7762
Glu Met Tyr Ile	Gly Trp Ala Ala Tyr	Phe		
2380	2385			
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<211> 2386

<212> PRT

<213> Homo sapiens

<400> 4

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		15

Arg Gly Leu Asp Asp Arg Gln Ala Phe Gly Gln Leu Leu Lys Glu Val		
20	25	30

Leu Ala Leu Asp Lys Glu His Glu Leu Gly Arg Ser Asn Ser Leu Pro		
35	40	45

Ser Met Thr Ser Glu Leu Val Glu Val Leu Ile Glu Val Gly Leu Leu		
50	55	60

Ala Phe Lys His Asp Asp Ser Lys Ser Glu Phe Ile Ser Pro Lys Met		
65	70	75
		80

Leu Lys Glu Ala His Leu Ser Leu Gln Ala Leu Met Leu Ile Leu Lys
85 90 95

Arg Ser Pro Thr Val Leu Arg Glu Ile Lys Ser Ser Val Thr Leu Leu
100 105 110

Asp Trp Ile Leu Pro Arg Thr Ile Ser Leu Phe Ala Asp Ile Arg Phe
115 120 125

Ile Lys Leu Phe Asp Ser Leu Lys Glu Phe His Lys Leu Ile Tyr Gln
130 135 140

Leu Ile Ser Glu Lys Ser Phe Leu Trp Asp Leu Tyr Ala Ser Phe Met
145 150 155 160

Arg Tyr Trp Lys Tyr Tyr Ile Thr Asn Val Ser Ser Ile Val Leu Gln
165 170 175

Ile Thr Asn Ala Thr Phe Pro Tyr Lys Met Pro Ser Pro Asn Ser Gln
180 185 190

Pro Leu Gln Ser Ile Ser Pro Asn Tyr Pro Thr His Arg Glu Asp Lys
195 200 205

Phe Asp Leu Leu Ile Ile Asn Ile Glu Glu Ala Cys Thr Phe Phe Phe
210 215 220

Glu Ser Ala His Phe Phe Ala Gln Cys Ser Tyr Leu Lys Lys Ser Asn
225 230 235 240

Phe Pro Ser Pro Pro Leu Phe Thr Ala Trp Thr Trp Ile Lys Pro Cys
245 250 255

Phe Phe Asn Phe Val Ile Leu Leu Lys Arg Ile Ser Ile Gly Asp Ser
260 265 270

Gln Leu Phe Leu His Leu His Ser Arg Ile Val Gln Thr Leu Cys Cys
275 280 285

Phe Ser Leu Asn Phe Ile Tyr His Gly Leu Pro Ile Cys Glu Lys Ser
290 295 300

Lys His Ile Leu Met Ser Ser Ile Asn Leu Thr Leu Gly Ser Leu Lys
305 310 315 320

Lys Thr Tyr Thr Val Ala Asn Thr Ala Ile Ser Leu Phe Phe Leu Ser
325 330 335

Leu Phe Val Leu Pro Lys Thr Val Ala Gly Leu Phe Tyr Pro Phe Gly
340 345 350

Val Ser Leu Leu Ser Asp Phe Lys Val Leu Glu Gln Leu Glu Pro Asp
355 360 365

Ser Asp Leu Lys Lys Ala Ile Ile Leu Phe Lys Cys Arg Tyr Gln Ser
370 375 380

Ser Glu Ile Asp Gln Thr Thr Leu Arg Ala Phe Gly Glu Ile Cys Thr
385 390 395 400

Gly Lys Leu Glu Asn Thr Leu Phe Ser Asn Ser Glu Leu Asn Leu Phe
405 410 415

Leu Leu His Tyr Leu Ser Leu Asp Asn Asp Leu Ser Asn Ile Leu Lys
420 425 430

Val Asp Phe Gln Asn Gly His Asn Ile Cys Thr Phe Ala Lys Trp Cys
435 440 445

Ile Asn Asn Asn Leu Asp Glu Pro Ser Asn Leu Lys His Phe Arg Glu
450 455 460

Met Leu Asp Tyr Tyr Ser Ser His Asn Val Thr Ile Ser Glu Asp Asp
465 470 475 480

Leu Lys Asn Phe Ser Leu Val Leu Cys Thr His Val Ala Lys Val Asn
485 490 495

Glu Lys Thr Asn Ser Ile Phe Arg Thr Tyr Glu Val His Gly Cys Glu
500 505 510

Val Cys Asn Ser Phe Cys Leu Leu Phe Asp Glu Arg Ser Pro Phe Lys
515 520 525

Ile Pro Tyr His Glu Leu Phe Cys Ala Leu Leu Lys Asn Pro Asp Ile
530 535 540

Ile Ser Ser Ser Val Lys Gln Ser Leu Leu Leu Asp Gly Phe Phe Arg
545 550 555 560

Trp Ser Gln His Cys Ser Asn Phe Asn Lys Glu Ser Met Leu Ser Leu
565 570 575

Arg Glu Phe Ile Met Lys Ala Leu Ala Ser Thr Ser Arg Cys Leu Arg
580 585 590

Val Val Ala Ala Lys Val Leu Pro Ile Phe Ile Lys Gly Pro Asn Asn
595 600 605

Leu Asp Ile Val Glu Phe His Lys Glu Ser Lys Ala Leu Ile Phe Asn
610 615 620

Thr Leu Lys Ile Leu Ala Val Glu Asn Thr Ala Ile Leu Glu Thr Val
625 630 635 640

Ile Leu Ser Trp Ile Ser Leu Ser Arg Val Val Glu Glu Glu Leu
645 650 655

His Phe Val Leu Leu Glu Val Ile Ser Ser Val Ile Asn Ser Gly Ile
660 665 670

Phe Tyr Gln Gly Ile Gly Leu Ser Ala Leu Gln Gln Ile Ala Ser Thr
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Arg His Ile Ser Val Trp Gln Leu Leu Ser Pro Tyr Trp Pro Thr Val
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Ser Val Ala Ile Val Gln Gly Met Gly Lys Lys Pro Asn Ile Ala Ser
705 710 715 720

Leu Phe Ala Gln Leu Met Asn Ile Ser Glu Gly Asp Phe Leu Ile Arg
725 730 735

Thr Gln Ala Tyr Thr Leu Pro Phe Leu Val Leu Thr Lys Asn Lys Ala
740 745 750

Leu Ile Val Arg Ile Ala Glu Leu Ser Gln Ser Asp Val Ala Thr Leu
755 760 765

Cys Leu Thr Asn Met His Lys Ile Leu Ala Ser Leu Leu Thr Thr Asp
770 775 780

His Pro Asn Leu Glu Glu Ser Val Met Leu Leu Leu Ser Leu Ala Thr
785 790 795 800

Ser Asp Phe Glu Lys Val Asp Leu Thr Ser Leu Leu Arg Ser Asp Pro
805 810 815

Ile Ser Ile Thr Val Glu Leu Leu Gln Leu Tyr Gln Asn Asp Val Pro
820 825 830

His Glu Lys Ile Glu Asn Ala Leu Arg Lys Val Ala Met Ile Val Ser
835 840 845

Gln Val Val Asn Asp Glu Asp Leu Ser Asn Lys Glu Leu Leu Tyr Asp
850 855 860

Phe Phe Asn Asn His Ile Leu Gly Ile Leu Ala Glu Phe Ser Asn Ile
865 870 875 880

Leu Asn Asp Leu Lys Gly Lys Thr Ser Ile Asn Glu Lys Ile Lys Thr
885 890 895

Ile Val Gly Ile Glu Lys Met Leu Ser Leu Cys Gly Gly Ala Val Lys
900 905 910

Leu Gly Leu Pro Gln Ile Leu Ser Asn Leu Gln Ser Ala Phe Gln Asn
915 920 925

Glu His Leu Arg Phe Tyr Ala Ile Lys Ala Trp Phe Ser Leu Ile Leu
930 935 940

Ala Thr Lys Glu Pro Glu Tyr Ser Ser Ile Ala Gly Leu Ser Leu Val
945 950 955 960

Ile Leu Pro Pro Leu Phe Pro Tyr Leu Glu Pro Gln Glu Ala Glu Leu
965 970 975

Val Ile Gln Ile Phe Asp Phe Ile Ser Ser Asp Thr His Lys Cys Leu
980 985 990

Gln Gly Leu Lys Trp Ala Ile Pro Thr Ser Leu Asp Ser Ala Cys Phe
995 1000 1005

Ser Leu Lys Ala Lys Glu Ile Phe Cys Ser Leu Gln Asn Glu Asp
1010 1015 1020

Phe Tyr Ser Glu Leu Gln Ser Ile Ile Lys Cys Leu Thr Asn Glu
1025 1030 1035

Asn Glu Pro Val Cys Tyr Leu Gly Leu Gln Lys Leu Glu Leu Phe
1040 1045 1050

Phe Gln Ala Lys Val Asp Glu Leu His Asp Thr Leu Asn Leu Asp
1055 1060 1065

Ile Ser Asn Glu Val Leu Asp Gln Leu Leu Arg Cys Leu Leu Asp
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Cys Cys Val Lys Tyr Ala Ser Thr Asn Met Gln Ile Ser Tyr Leu
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Ala Ala Lys Asn Leu Gly Glu Leu Gly Ala Ile Asp Pro Ser Arg
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Ala Lys Ala Gln His Ile Ile Lys Glu Thr Val Val Leu Asp Asn
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Phe Glu Asn Gly Glu Glu Ser Leu Lys Phe Ile Leu Asp Phe Met
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Gln Ser Gln Leu Ile Pro Ala Phe Leu Val Thr Thr Asp Thr Lys
1145 1150 1155

Ala Gln Gly Phe Leu Ala Tyr Ala Leu Gln Glu Phe Leu Lys Leu
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Gly Gly Phe Lys Ser Ala Val Ile Asn Lys Lys Lys Gly Leu Thr
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Val Val Thr Glu His Trp Met Ser Leu Pro Asp Leu Ser Lys Arg
1190 1195 1200

Val Leu Ile Pro Phe Leu Thr Ser Lys Tyr His Leu Thr Pro Ile
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Pro Lys Ile Asp Ile Arg Tyr Pro Ile Tyr Lys Glu Asn Val Thr
1220 1225 1230

Ile His Thr Trp Met Gln Leu Phe Ser Leu Lys Leu Met Glu Tyr
1235 1240 1245

Ala His Ser Gln Asn Ala Glu Lys Ile Phe Gly Ile Cys Ser Lys
1250 1255 1260

Val Val Lys Asp Gln Glu Val Asn Ile Pro Cys Phe Leu Leu Pro
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Phe Leu Val Leu Asn Val Ile Leu Thr Glu Ser Glu Leu Glu Val
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Asn Lys Val Ile Glu Glu Phe Gln Leu Val Ile Asn Gln Pro Gly
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Pro Asp Gly Leu Asn Ser Val Gly Gln Gln Arg Tyr Thr Ser Phe
1310 1315 1320

Val Asp Val Phe Phe Lys Ile Val Asp Tyr Leu Asn Lys Trp Leu
1325 1330 1335

Arg Met Arg Lys Lys Arg Asn Trp Asp Arg Arg Ser Ala Ile Ala
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Arg Lys Glu Asn Arg Tyr Met Ser Val Glu Asp Ala Thr Ser Arg
1355 1360 1365

Glu Ser Ser Ile Ser Lys Val Glu Ser Phe Leu Ser Arg Phe Pro
1370 1375 1380

Ser Lys Thr Leu Gly Ile Val Ser Leu Asn Cys Gly Phe His Ala
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Arg Ala Leu Phe Tyr Trp Glu Gln His Ile Arg Asn Ala Thr Ala
1400 1405 1410

Pro Tyr Ala Ala Leu Glu Ser Asp Tyr Arg Val Leu Gln Glu Ile
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Tyr Ala Gly Ile Asp Asp Pro Asp Glu Ile Glu Ala Val Ser Leu
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Asn Phe His Asp Tyr Ser Phe Asp Gln Gln Leu Leu Leu His Glu
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Asn Ser Gly Thr Trp Asp Ser Ala Leu Ser Cys Tyr Glu Ile Ile
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Ile Gln Lys Asp Pro Glu Asn Lys Lys Ala Lys Ile Gly Leu Leu
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Asn Ser Met Leu Gln Ser Gly His Tyr Glu Ser Leu Val Leu Ser
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Ala Lys Leu Gly Ser Ile Phe Tyr Gln Tyr Leu Arg Lys Asp Ser
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Phe Ala Glu Leu Thr Glu Arg Leu Gln Pro Leu Tyr Val Asp Ala
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Ala Thr Ala Ile Ala Asn Thr Gly Ala His Ser Ala Tyr Asp Cys
1580 1585 1590

Tyr Asp Ile Leu Ser Lys Leu His Ala Ile Asn Asp Phe Ser Arg
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Ile Ala Glu Thr Asp Gly Ile Val Ser Asp Asn Leu Asp Ile Val
1610 1615 1620

Leu Arg Arg Arg Leu Ser Gln Val Ala Pro Tyr Gly Lys Phe Lys
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His Gln Ile Leu Ser Thr His Leu Val Gly Tyr Glu Lys Phe Glu
1640 1645 1650

Asn Thr Lys Lys Thr Ala Glu Ile Tyr Leu Glu Ile Ala Arg Ile
1655 1660 1665

Ser Arg Lys Asn Gly Gln Phe Gln Arg Ala Phe Asn Ala Ile Leu
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Lys Ala Met Asp Leu Asp Lys Pro Leu Ala Thr Ile Glu His Ala
1685 1690 1695

Gln Trp Trp Trp His Gln Gly Gln His Arg Lys Ala Ile Ser Glu
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Leu Asn Phe Ser Leu Asn Asn Asn Met Phe Asp Leu Val Asp Glu
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His Glu Glu Arg Pro Lys Asn Arg Lys Glu Thr Leu Gly Asn Pro
1730 1735 1740

Leu Lys Gly Lys Val Phe Leu Lys Leu Thr Lys Trp Leu Gly Lys
1745 1750 1755

Ala Gly Gln Leu Gly Leu Lys Asp Leu Glu Thr Tyr Tyr His Lys
1760 1765 1770

Ala Val Glu Ile Tyr Ser Glu Cys Glu Asn Thr His Tyr Tyr Leu
1775 1780 1785

Gly His His Arg Val Leu Met Tyr Glu Glu Glu Gln Lys Leu Pro
1790 1795 1800

Val Asn Glu Gln Ser Glu Arg Phe Leu Ser Gly Glu Leu Val Thr
1805 1810 1815

Arg Ile Ile Asn Glu Phe Gly Arg Ser Leu Tyr Tyr Gly Thr Asn
1820 1825 1830

His Ile Tyr Glu Ser Met Pro Lys Leu Leu Thr Leu Trp Leu Asp
1835 1840 1845

Phe Gly Ala Glu Glu Leu Arg Leu Ser Lys Asp Asp Gly Glu Lys
1850 1855 1860

Tyr Phe Arg Glu His Ile Ile Ser Ser Arg Lys Lys Ser Leu Glu
1865 1870 1875

Leu Met Asn Ser Asn Val Cys Arg Leu Ser Met Lys Ile Pro Gln
1880 1885 1890

Tyr Phe Phe Leu Val Ala Leu Ser Gln Met Ile Ser Arg Val Cys
1895 1900 1905

His Pro Asn Asn Lys Val Tyr Lys Ile Leu Glu His Ile Ile Ala
1910 1915 1920

Asn Val Val Ala Ser Tyr Pro Gly Glu Thr Leu Trp Gln Leu Met
1925 1930 1935

Ala Thr Ile Lys Ser Thr Ser Gln Lys Arg Ser Leu Arg Gly Lys
1940 1945 1950

Ser Ile Leu Asn Val Leu His Ser Arg Lys Leu Ser Met Ser Ser
1955 1960 1965

Lys Val Asp Ile Lys Ala Leu Ser Gln Ser Ala Ile Leu Ile Thr
1970 1975 1980

Glu Lys Leu Ile Asn Leu Cys Asn Thr Arg Ile Asn Ser Lys Ser
1985 1990 1995

Val Lys Met Ser Leu Lys Asp His Phe Arg Leu Ser Phe Asp Asp
2000 2005 2010

Pro Val Asp Leu Val Ile Pro Ala Lys Ser Phe Leu Asp Ile Thr
2015 2020 2025

Leu Pro Ala Lys Asp Ala Asn Arg Ala Ser His Tyr Pro Phe Pro
2030 2035 2040

Lys Thr Gln Pro Thr Leu Leu Lys Phe Glu Asp Glu Val Asp Ile
2045 2050 2055

Met Asn Ser Leu Gln Lys Pro Arg Lys Val Tyr Val Arg Gly Thr
2060 2065 2070

Asp Gly Asn Leu Tyr Pro Phe Leu Cys Lys Pro Lys Asp Asp Leu
2075 2080 2085

Arg Lys Asp Ala Arg Leu Met Glu Phe Asn Asn Leu Ile Cys Lys
2090 2095 2100

Ile Leu Arg Lys Asp Gln Glu Ala Asn Arg Arg Asn Leu Cys Ile
2105 2110 2115

Arg Thr Tyr Val Val Ile Pro Leu Asn Glu Glu Cys Gly Phe Ile
2120 2125 2130

Glu Trp Val Asn His Thr Arg Pro Phe Arg Glu Ile Leu Leu Lys
2135 2140 2145

Ser Tyr Arg Gln Lys Asn Ile Pro Ile Ser Tyr Gln Glu Ile Lys
2150 2155 2160

Val Asp Leu Asp Phe Ala Leu Arg Ser Pro Asn Pro Gly Asp Ile
2165 2170 2175

Phe Glu Lys Lys Ile Leu Pro Lys Phe Pro Pro Val Phe Tyr Glu
2180 2185 2190

Trp Phe Val Glu Ser Phe Pro Glu Pro Asn Asn Trp Val Thr Ser
2195 2200 2205

Arg Gln Asn Tyr Cys Arg Thr Leu Ala Val Met Ser Ile Val Gly
2210 2215 2220

Tyr Val Leu Gly Leu Gly Asp Arg His Gly Glu Asn Ile Leu Phe
2225 2230 2235

Asp Glu Phe Thr Gly Glu Ala Ile His Val Asp Phe Asn Cys Leu
2240 2245 2250

Phe Asp Lys Gly Leu Thr Phe Glu Lys Pro Glu Lys Val Pro Phe
2255 2260 2265

Arg Leu Thr His Asn Met Val Asp Ala Met Gly Pro Thr Gly Tyr
2270 2275 2280

Glu Gly Gly Phe Arg Lys Ala Ser Glu Ile Thr Met Arg Leu Leu
2285 2290 2295

Arg Ser Asn Gln Asp Thr Leu Met Ser Val Leu Glu Ser Phe Leu
2300 2305 2310

His Asp Pro Leu Val Glu Trp Asn Arg Lys Lys Ser Ser Ser Lys
2315 2320 2325

Tyr Pro Asn Asn Glu Ala Asn Glu Val Leu Asp Ile Ile Arg Lys
2330 2335 2340

Lys Phe Gln Gly Phe Met Pro Gly Glu Thr Ile Pro Leu Ser Ile
2345 2350 2355

Glu Gly Gln Ile Gln Glu Leu Ile Lys Ser Ala Val Asn Pro Lys
2360 2365 2370

Asn Leu Val Glu Met Tyr Ile Gly Trp Ala Ala Tyr Phe
2375 2380 2385

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Lys Phe Pro Pro Xaa Xaa Tyr Xaa Trp Phe
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1 5